

9/13/2022 DATE



REQUIRED COURSE



ELECTIVE COURSE

MSD

DIVISION



NEW COURSE



REVISION

Lake Land College

Course Information Form

COURSE NUMBER:		CHM-120		TITLE: (30 Characters Max)		General, Organic and Biochemistry I					
SEM CR HRS:	4	Lecture:	3		Lab:	2	SOE/ Internship:		0	ECH:	5
Course Level:	<input checked="" type="checkbox"/> Gen Ed / IAI <input type="checkbox"/> Baccalaureate /Non-IAI		<input type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/ Not in Degree Audit		Clinical Practicum:	0	SOE/ Internship:		0	SOE ECH:	0
COURSE PCS #	11 - 40.0501		IAI Code		P1 902L		Contact Hours (Minutes Per Week)				
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:	Max:	16 Wks	250	8 wks	500
Prerequisites:	None										
Catalog Description: (40 Word Limit)	Fundamentals of inorganic chemistry including history, atomic theory, bonding, stoichiometry, gases, solids, solutions, chemical equilibria, acids, bases, salts, pH, and electrochemistry.										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Non-Clinical Internship/ SOE
Careers in Chemistry	1			
Basis of Chemistry	3	4		
Atomic Theory	5	2		
Chemical Formulas and Bonding	5	2		
Chemical Equation and Stoichiometry	5	2		
Gases	5	4		
Liquid and Solid State	3	2		
Solutions, Dispersions, Suspensions	5	4		
Chemical Equilibrium and Reaction Rates	5	4		
Acids, Bases, Salts, pH, Buffers	5	4		
Electrochemistry	3	2		
TOTAL		45	30	0

EVALUATION

QUIZZES <input checked="" type="checkbox"/>	EXAMS <input checked="" type="checkbox"/>	ORAL PRES <input type="checkbox"/>	PAPERS <input type="checkbox"/>
LAB WORK <input checked="" type="checkbox"/>	PROJECTS <input type="checkbox"/>	COMP FINAL <input checked="" type="checkbox"/>	OTHER <input type="checkbox"/>

COURSE MATERIALS

TITLE:	General, Organic & Biological Chemistry
AUTHOR:	H. Stephen Stoker
PUBLISHER:	Cengage Learning
VOLUME/EDITION/URL:	6th
COPYRIGHT DATE:	2013

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Careers in Chemistry	1	Describe the career opportunities in chemistry and related areas such as biology, agriculture engineering, medicine, oceanography and other areas.
Basis of Chemistry	7	Use the SI and British system for calculation of mass, volume, length, temperature, density, specific gravity and make conversions between the two systems.
Atomic Theory	7	Describe Dalton's atomic theory. Distinguish between atomic number and atomic weight. Write electron configurations for elements.
Chemical Formulas and Bonding	7	Use the periodic table to write formulas for compounds and name compounds. Draw Lewis structures and predict geometry of compounds.

Chemical Equation & Stoichiometry	7	Balance formula equations, determine limiting reagent, calculate the quantities of chemical elements or compounds involved in chemical reactions, and the number of moles or mass of one reactant or product.
Gases	9	Use Boyle's Law, Charles's Law, Ideal Gas Law, and Dalton's Law to solve problems involving gases.
Liquid and Solid State	5	Describe the types of intermolecular forces that would exist in a compound from its structure and cite several ways solids differ from liquids.
Solutions, Dispersions, Suspensions	9	Calculate mass %, volume %, molarity, molality, and normality of solutions. Make calculations of colligative properties of solutions from concentration data.
Chemical Equilibrium and Reaction Rates	9	Write equilibrium expressions from a balanced equation, use LeChâtelier's Principle, and calculate the concentration of all species at equilibrium.
Acids, Bases, Salts, pH, Buffers	9	Define terms acid, base, salt, and buffer. Calculate the pH of solutions from hydronium or hydroxyl ion concentration and vice versa. Explain how a buffer solution works. Perform acid-base titrations.
Electrochemistry	5	Balance oxidation reduction reactions, distinguish between electrolytic and voltaic cells, and label anode and cathode of each.
75		

COURSE OUTCOMES*	At the successful completion of this course, students will be able to:
	<ul style="list-style-type: none"> • Use measurements, unit systems and dimensional analysis in calculations.
	<ul style="list-style-type: none"> • Apply scientific language to describe chemical phenomena.
	<ul style="list-style-type: none"> • Use Atomic theory to predict elemental reactivity and properties based on the periodic table.
	<ul style="list-style-type: none"> • Solve all types of stoichiometry calculations.
	<ul style="list-style-type: none"> • Compare and contrast ionic and covalent compounds.
	<ul style="list-style-type: none"> • Describe and quantify the driving forces of a chemical reaction, thermodynamics, kinetics and equilibrium.
	<ul style="list-style-type: none"> • Explain the chemical uniqueness for the gas, liquid and solid states.
	<ul style="list-style-type: none"> • Discuss the characteristics and the reactions of acids and bases.
	<ul style="list-style-type: none"> • Safely collect data and analyze data obtained through experiments.

* Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.